

# Wilcox Crittenden Skipper II Marine Toilet

## On Board Repairs

### Product Specifications

Seat Height: 17 3/16" (435mm)

Width: 16 1/2" (420mm)

Depth: 17" (430mm)

Weight: 58lb. (26.3kg)

Intake I.D.: 3/4" (19mm)

Discharge I.D.: 1 1/2" (38mm)

Pump I.D.: 4" (102mm)

Handle Height: 26" (660mm)

Warranty: 2yrs

Although the Wilcox Crittenden Skipper II Marine Toilet is relatively reliable, there are occasions that it malfunctions and this document is a set of notes to aid in affecting on board repairs. The parts list and associated illustrated parts breakdown (IPB) are contained in pages 23 & 23. You can identify the parts by comparing the numbers in the parts list with the IPB.

The following 2 conditions may be remedied without removing the toilet from the Head compartment.

## Condition #1

### **Symptom:**

Foot pedal (#39) stays depressed or falls back down and allows sea water to continually flow into the bowl and overflow into the shower sump.

### **Malfunction:**

The Flush Control Lever Spring (#17) has weakened through use and is no longer strong enough to keep the foot pedal in the up position.

### **Solution:**

Do not attempt to repair the spring while underway. Rather use your McGyver ingenuity and attach a bungee or cord to tie the foot pedal in the up position, or secure (close) the seawater intake valve when not flushing the head.



Normal full up position



Normal fall down position



Attached Bungee cord

## Condition #2

### **Symptom:**

Leaking Pump Shaft Packing Cap (#48)

### **Malfunction:**

The threads on the Pump Shaft Packing Cap (#48) are not tight enough to compress the Pump Shaft Packing (#52)

### **Solution:**

Since the leakage is only uncontaminated seawater, recommend you do not attempt on board repair because you may strip the threads on the cap and exacerbate the problem.

Warning: both the pump Shaft Packing Cap (#48) and the base casting housing (#53) are bronze and if you over tighten the cap, the leak may become severe.

With the warning in mind, you may gently tighten The Shaft Packing Cap (#48) until the leak subsides.



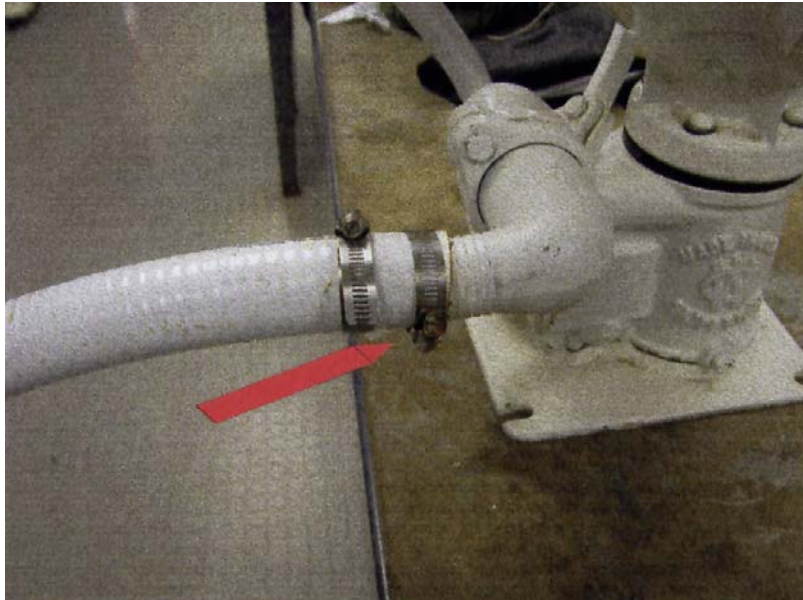
Pump Shaft Packing Cap

Other malfunctions will require removing the toilet from the head compartment.

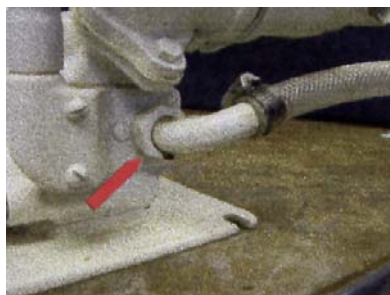
## Removing the Toilet From the Head Compartment

Using the Thirsty Mate hand pump, remove as much affluent from the bowl as practical by pumping the affluent into a bucket. You may need to evacuate several times by adding water to the bowl to remove the majority of the waste.

1. **Do not remove the coupling flange bolts, which hold the Discharge Tailpiece (#22) to the Main Riser Main (#26).** Remove the hose from the Discharge Tailpiece (#22) by loosening the 2 hose clamps until you can slide the hose from the tailpiece.



2. Remove the intake hose by loosening Inlet Valve Tailpiece nut (#7) leaving the 90° Tailpiece on the hose. Make sure the leather Tailpiece Gasket (#8) is saved and note the smooth side is against the bronze Inlet Valve Tailpiece Nut (#7).

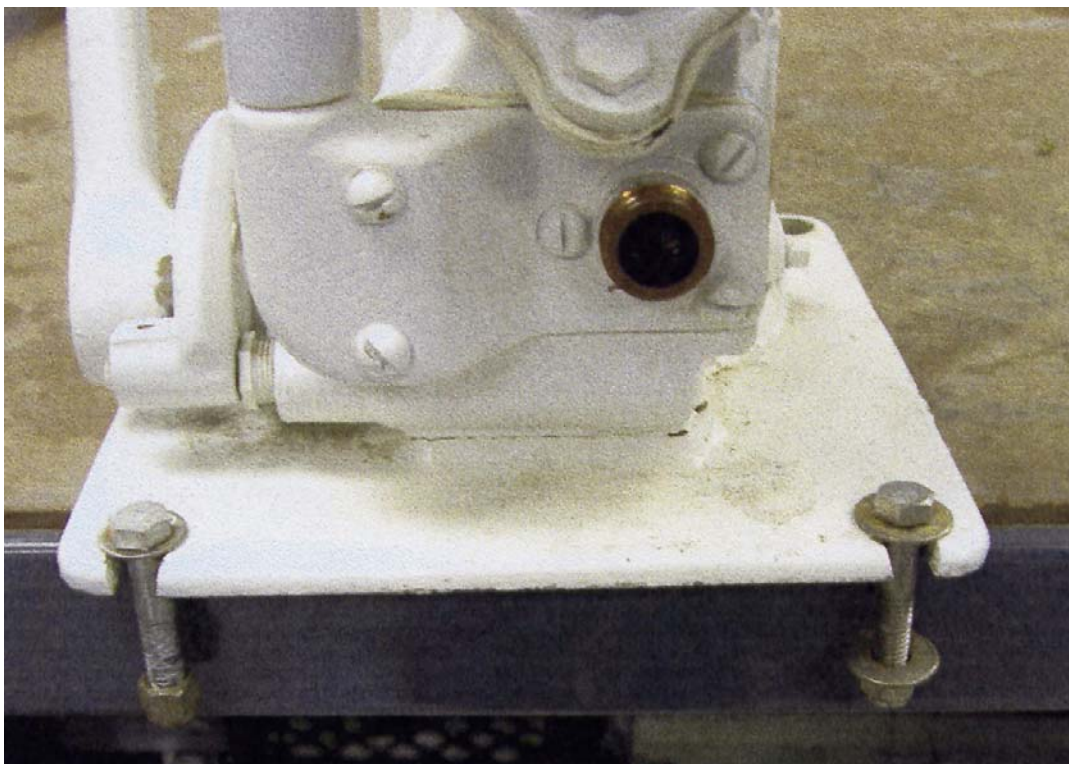




3. Remove the front 2 Base Plate securing bolts by accessing the bolt head through the outboard access cover. Although you may find other size bolts, normally the securing bolts are 3/8 inch.



4. Since the back base plate securing holes are open ended, you only loosen the 2 aft bolts and slide the toilet forward.



5. Turn head upside down and drain the residual affluent into a bucket.



6. Move the drained toilet to the Navy 44 galley area and turn it upside down on the trashcan where you can complete the disassembly as required.





## Final Disassembly

1. Remove the Base Plate (#31) by extracting the 7 exposed screws. Remove the front center screw last and allow the spring pressure to relieve itself against the plate.



2. Remove the Base Plate (#31) from the housing and clean the gasket area by scrapping with a putty knife or other flat blade tool.

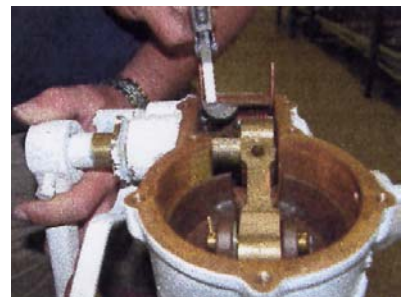
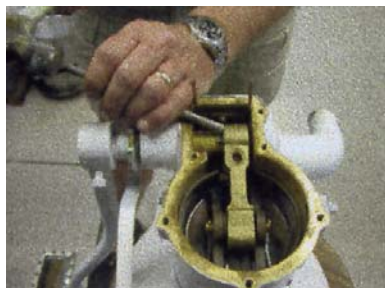
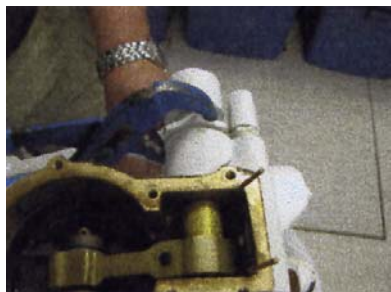


**You will use a new gasket when the unit is reassembled.**

3. Remove the Piston Lever Screw and washer (#33).

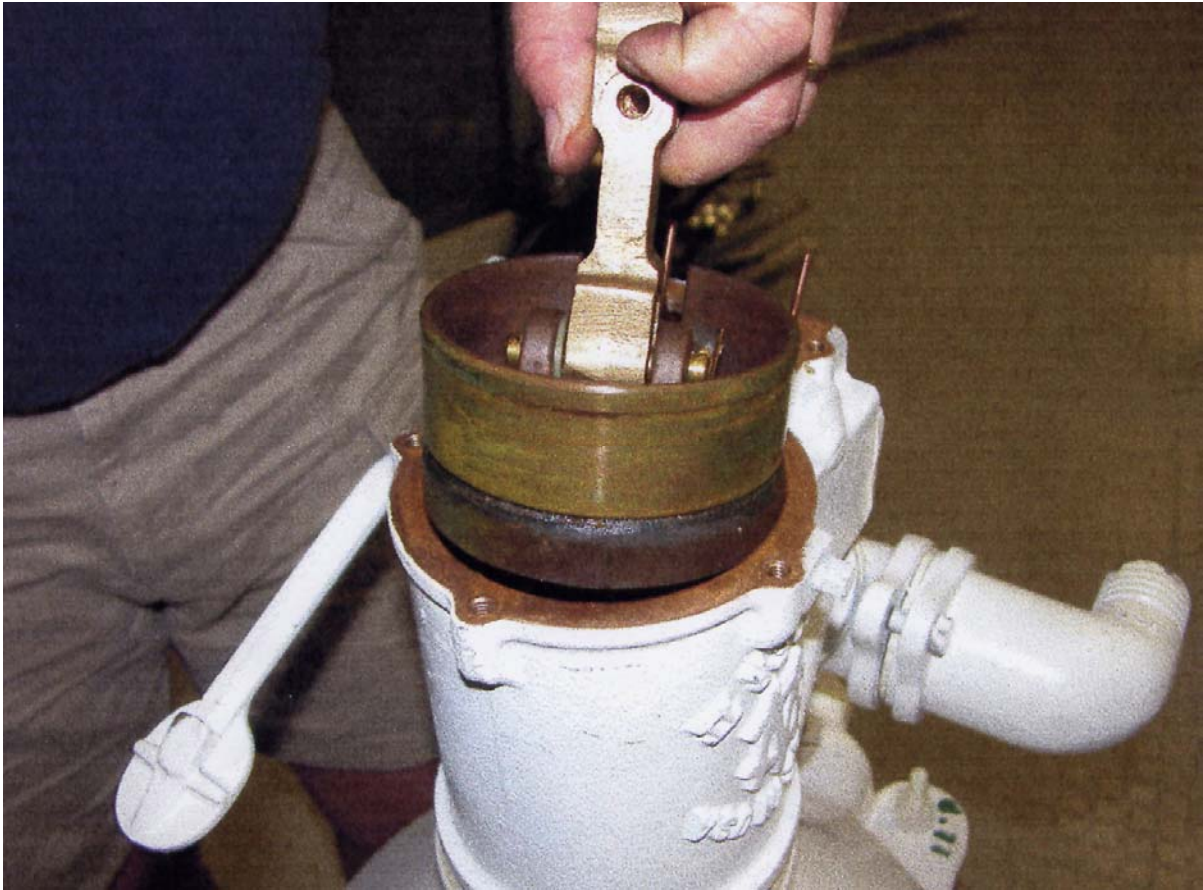


4. Make sure you do not loose the Pump Shaft Key (#50). To remove the Pump Handle (#46) and the attached Pump Shaft (#49), loosen the Pump Shaft Packing Cap (#48), then use a drift to tap the Piston Lever (#34) away from the handle while you pull the Pump Handle (#46) in the opposite direction. Continue tapping and pulling until the Pump Shaft Key (#50) is completely exposed. Remove and save the Pump Shaft Key (#50).





5. Extract the Piston Head (#37) and the attached Piston Lever (#34). Note the Piston Cup Leather #38). If it is damaged, the unit must be repaired by professionals.



6. If required you may remove the 2 cotter pins and slide the Piston Pin (#35) from the Piston Lever (#34).



7. You now have access to any failed part except the Foot Pedal (#39) and it's associated Inlet Control Shaft (#42). The function of the Inlet Control Shaft is to let seawater into the bowl. If the Inlet Control Shaft malfunctions, it is recommended you add water, as required, to the bowl using a bucket rather than attempt on board repair.

## Condition #3

### Symptom:

Pump Handle (#46) operates freely but does not pump affluent from the Bowl (#58), or the

Pump Handle does not have a smooth or continuous motion at the top or bottom of the stroke or the pumping action does not remove fluid from the bowl at a normal rate.

### Malfunction:

A Cotter Key in the Piston Head Pin (#35) failed allowing the Piston Pin to back out of the Piston Lever (# 34) partially disengaging from the Piston Head (#37). This prevents full travel of the Piston Head (#37) and therefore fails to remove fluid from the bowl.

### Solution:

Remove the toilet from the Head Compartment and disassemble in accordance with the instructions outlined in the Removing the Toilet From the Head Compartment and Final Disassembly sections. Replace the Cotter Keys as required with non-magnetic (bronze or brass) keys (pins).



If bronze or brass keys are not available, use any key or pin and report the substitution to maintenance personnel upon return. The corrosive effect of saltwater will rapidly deteriorate any magnetic material.

## Condition #4

### Symptom:

Pump handle cycles freely but does not exhibit pumping action. (No pressure on the handle)

### Malfunction:

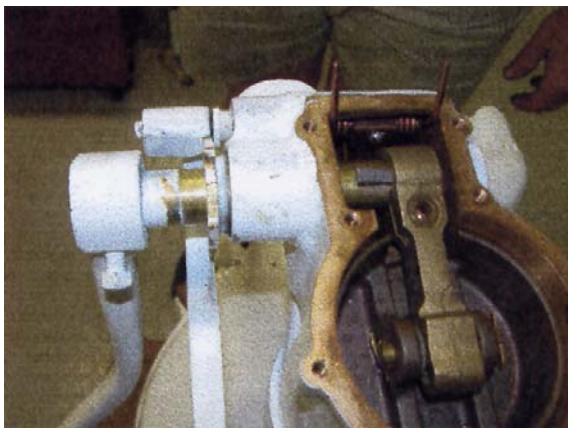
Pump Shaft Key (#50) has slipped out of the shaft because the Piston Lever Screw (#33) was too loose allowing the Piston Lever (#34) to expand permitting the Pump Shaft (#49) to back out of the Base Cast Housing (#53).

### Solution:

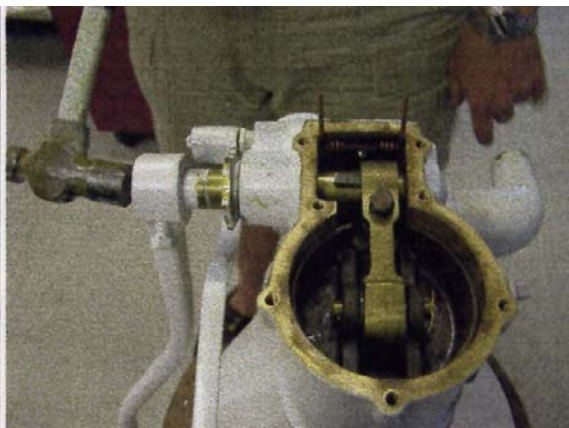
If you are lucky and the shaft has not backed out more than  $\frac{1}{4}$  inch observed on the shaft scribe mark, then you might be able to reseat the key by lightly tapping on the Pump Shaft Face and easing the shaft back into its housing and reseating the key. If this is successful, you will need to repeat this action as necessary to maintain the shaft in the housing because you will not be able to tighten the Piston Lever Screw (#33) and the Pump Shaft (#49) will continue to back out of the Base Case Housing (#53)

If the shaft has backed out far enough to allow the key to fall out of the shaft, then you will be required to remove the head and disassemble in accordance with the instructions. Fish the key from the Housing (#53) and reinsert in the Pump Shaft (#49), then slide the unit back into the housing and reassemble in accordance with the instructions to affect the repair.

After removing the base plate, loosen the piston lever screw (#33) (do not remove completely) until the shaft moves freely. The key will be in place or lying in the housing. If key is in place but skewed or rocked out of the shaft, reposition the key so it is parallel with the shaft. Lightly tap the Shaft Handle until the Pump Shaft (#49) has been seated back in the Housing (#53). Then tighten the piston lever screw (#33) to firmly hold the shaft. Remember the threads and screw are soft metal and are prone to stripping. You can even break the bolt.



Pump shaft backed out  $\frac{1}{4}$  inch with key dislodged.



Hammering shaft face



## Condition #5

### **Symptom:**

Y-Valve rotates freely but does not change the position of the Y-Valve

### **Malfunction 1:**

Y-Valve Handle Extension has broken and will not rotate the diverter shaft.

### **Solution 1:**

Remove the Handle Retention Screw and replace the Handle Extension. A spare is carried in the maintenance kit.



### **Malfunction 2:**

Y-Valve Diverter Shaft has broken and will not rotate the diverter shaft.

### **Solution 2:**

Replace the Y Valve Unit

Warning: Before your disconnect the outboard hose ensure the MSD tank is empty, otherwise affluent will drain back from the tank.

Warning: Do not reposition or move, even the slightest, the hose running between the Y Valve and the Discharge Tailpiece (#22).

## Clogged system

An ounce of prevention is worth a pound of cure and the solution to this problem is to never put anything into the bowl that did not go through your stomach.

### Condition #6

#### **Symptom:**

When the Pump Handle is pushed toward the back of the toilet, affluent seems to run back into the bowl.

#### **Malfunction:**

The Joker Valve (#25) functions as a one way check valve. When the duck bill does not fully close, affluent may back flow into the bowl.



#### **Solution:**

Pump the handle vigorously in an attempt to dislodge the item that is holding the duck bill open. If this is unsuccessful, remove the Coupling Flange Bolts (#19).



Then separate the Rising Main (#26) from the Discharge Tailpiece (#22).



This exposes the Joker Valve (#25) and will allow you to remove the obstruction. If the Joker Valve (#25) duck bill has lost its flexibility, replace the Joker Valve (#25)

## Condition #7

### **Symptom:**

Clog is not in the Joker Valve (#25), then it is down stream and the next most likely area is the 90° Discharge Tailpiece (#22)

### **Malfunction:**

Constriction in the unit combined with the 90° turn is a likely area to trap waste.

### **Solution:**

Since the unit has already been disassembled above, inspect and remove the errant material.



## Condition #8

### Symptom:

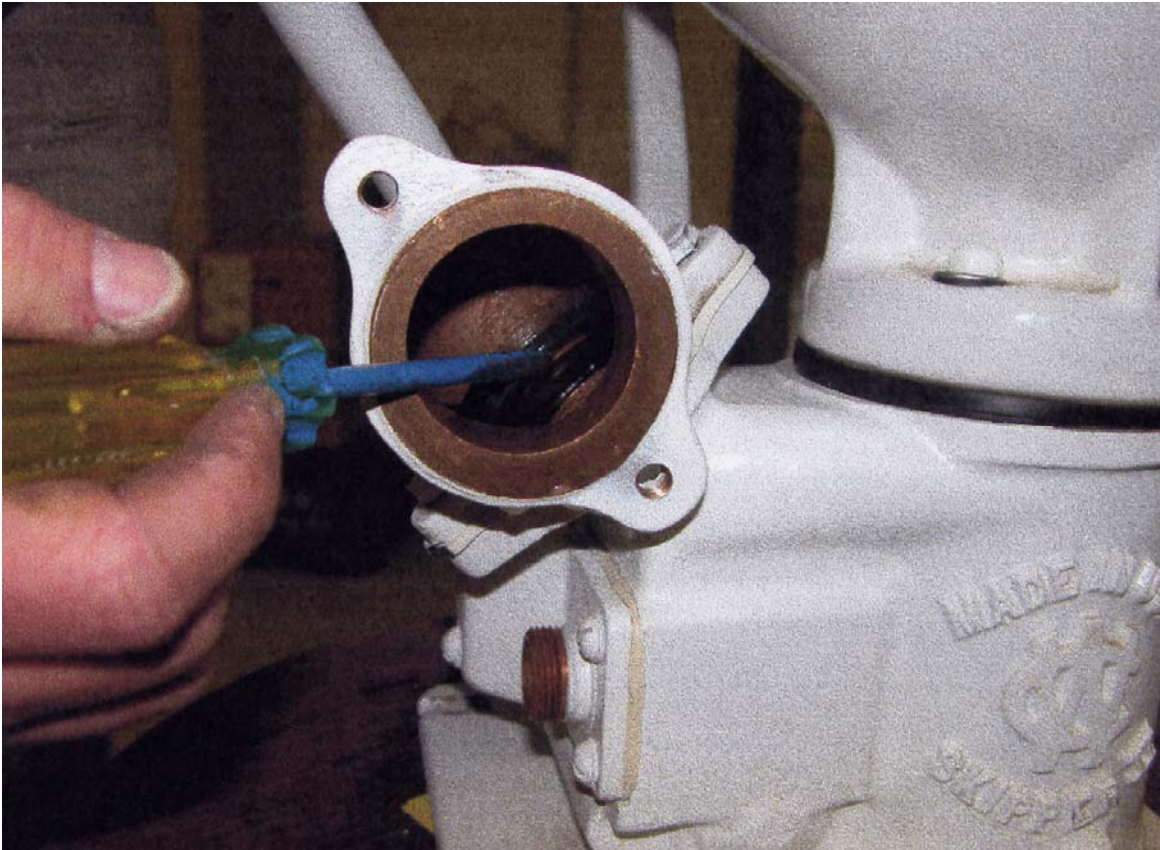
Clog is not in the 90° Discharge Tailpiece (#22), then it is down stream and the next most likely area is the Discharge Flap Valve Assembly (#28) housed in the Rising Main (#26).

### Malfunction:

Discharge Flap Valve Assembly (#28) has trapped waste.

### Solution:

Since the 90° Discharge Tailpiece (#22) has already been removed from the Rising Main (#26), you have access to the Discharge Flap Valve Assembly (#28). Inspect and remove the errant material.



## Condition #9

### **Symptom:**

Clog is not in Discharge Flap Valve Assembly (#28), then it is farther down stream and the next most likely area is the Y-Valve.

### **Malfunction:**

The Y-Valve is a separate unit and mounted on the bulkhead aft of the Toilet. The multiple turns in the path of the affluent through this unit also encourages clogging.

Warning: Before your disconnect the outboard hose ensure the MSD tank is empty, otherwise affluent will drain back from the tank.

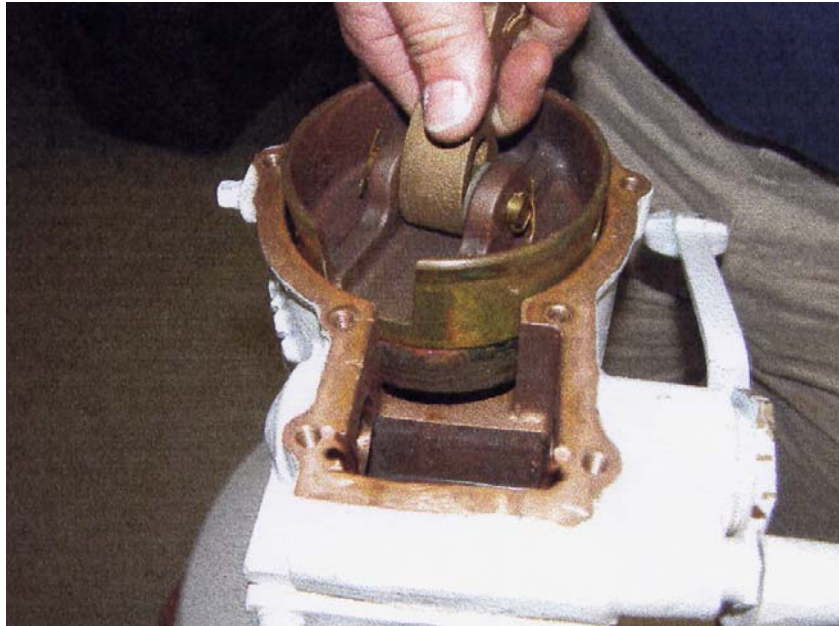
Warning: Do not reposition or move, even the slightest, the hose running between the Y Valve and the Discharge Tailpiece (#22).

### **Solution:**

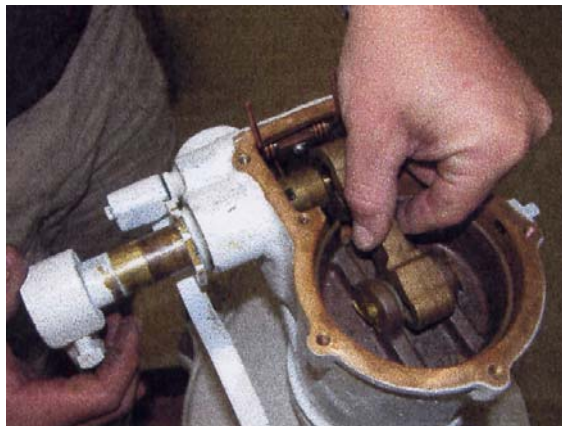
Replace the Y-Valve. If the clog remains then the clog is in the hose leading from the Discharge Tailpiece (#22) to the Y-Valve. Do not remove this hose from the original installation because you will in all probability not be able to reconnect because it was cut to the exact size and form fitted. The only option is to use a wire (or coat hanger) to dislodge any material clogging the tubing running from the Discharge Tailpiece (#22) to the Y-Valve

## Assembling the Toilet and installing it in the Head Compartment

1. Return the Piston Head (#37) and the attached Piston Lever (#34) to the cylinder. Insert the head into the cylinder until the Piston Cup Leather (#39) is just below the cylinder wall. Then using a twisting/screwing action, ease the Piston Head (#37) into the cylinder until the Piston Cup Leather (#39) clears the bottom cylinder wall lip. Be careful not to cut or slice the Piston Cup Leather (#39) as it may result in poor compression. Therefore use extreme care as you return the Piston Head (#37) and Piston Cup Leather (#39) unit back into the cylinder.

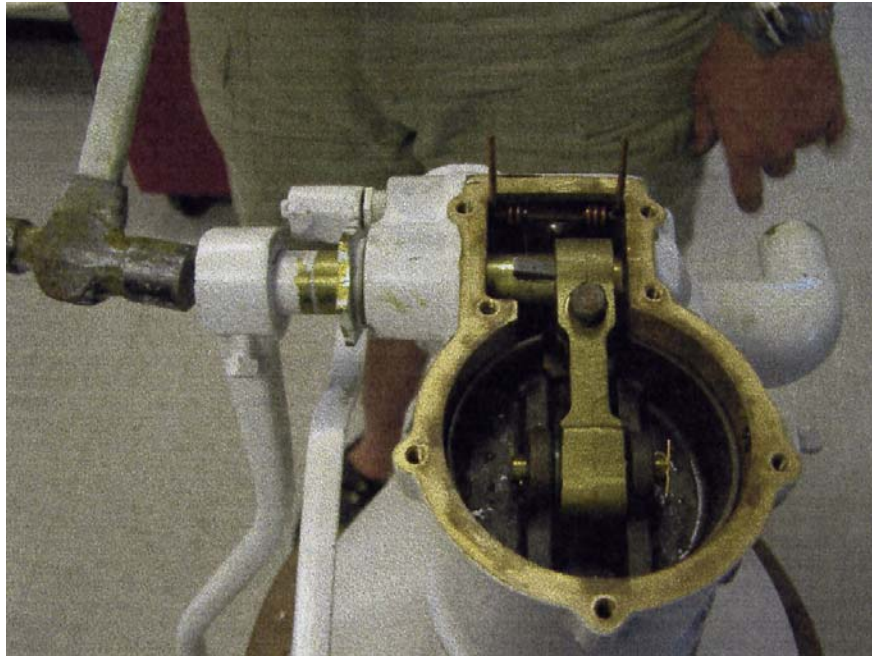


2. Return the Pump Handle (#46) and the attached Pump Shaft (#49) to the Base Casting (#53). As the Pump Shaft (#49) enters the housing, line up the Piston Lever (#34), then insert the Pump Shaft Key (#50) in the Pump Shaft (#49) slot.





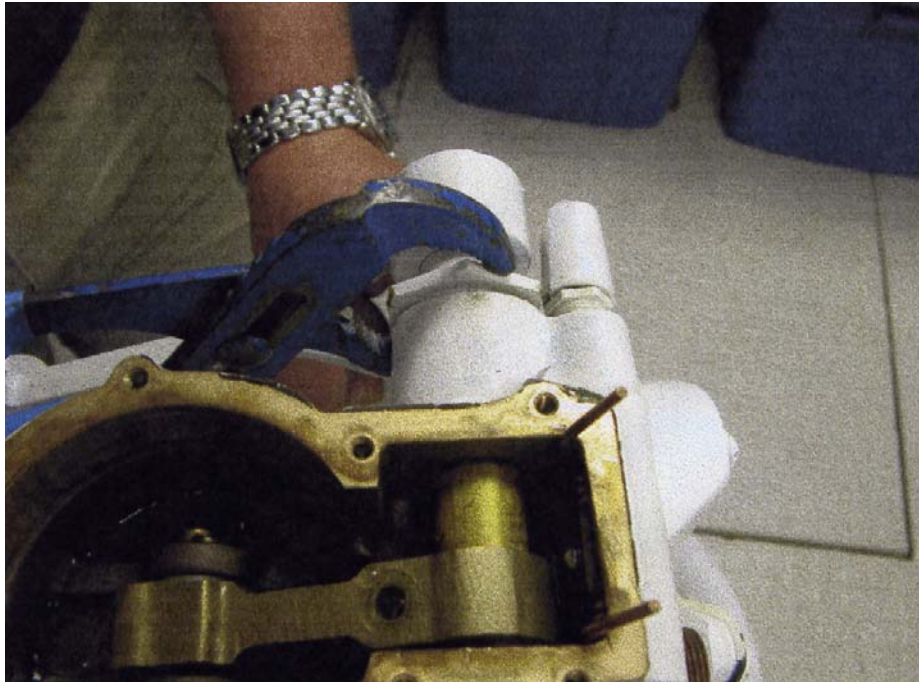
3. Once the shaft is properly aligned with the housing light tap the Pump Handle (#46) with a hammer to seat the Pump Shaft (#49) in the Base Casting (#53) while making sure the Pump Shaft Key (#50) stays in place.



4. Using a screw driver, force the Piston Lever toward the handle and firmly tighten the Piston Lever Screw (#33) to hold the shaft. Remember the threads and screw are soft metal and are prone to stripping. You can even break the bolt.



5. When the paint marks line up with the Pump Shaft Packing Cap (#48) and the Pump Shaft (#49) is securely in the Base Casting (#53), tighten the Pump Shaft Packing Cap (#48).



6. Installing the Base Plate (#31) is the most difficult part of assembly. Sea-Lube the new Base Plate Gasket (#32) and the Base Plate (#31) sealing surface. Place the front screw and one rear screw in the plate to hold the Base Plate Gasket (#32).

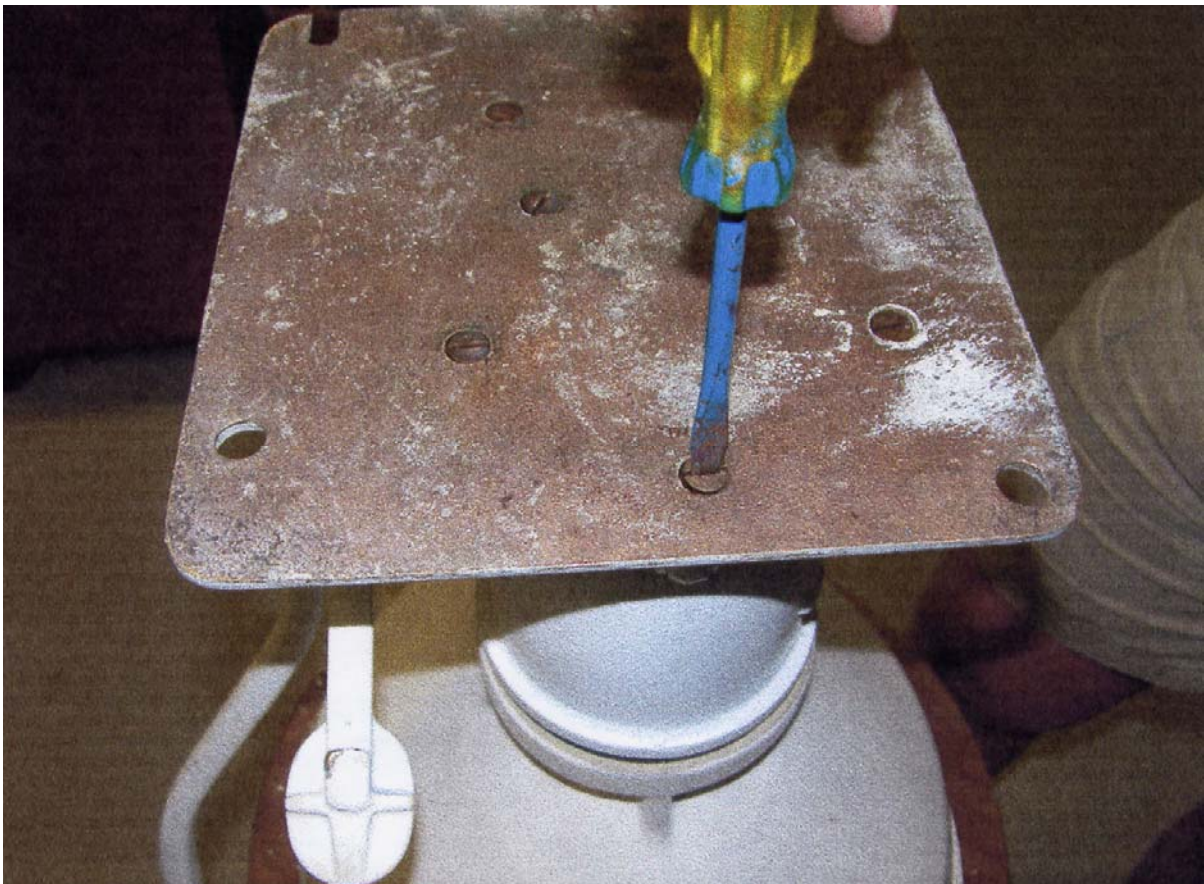




7. As you place the Base Plate (#31) on the Base Casting (#53), make sure the Flush Control Lever Spring (#17) is inside the Base Plate Gasket (#32).



8. Push down and forward on the plate until you can start the two Base Screws (#31). Once the plate is held in place with the two Base Screws (#31), start at the back and tighten the screws in pairs as you work forward. The last screw to be tightened is the one in front.



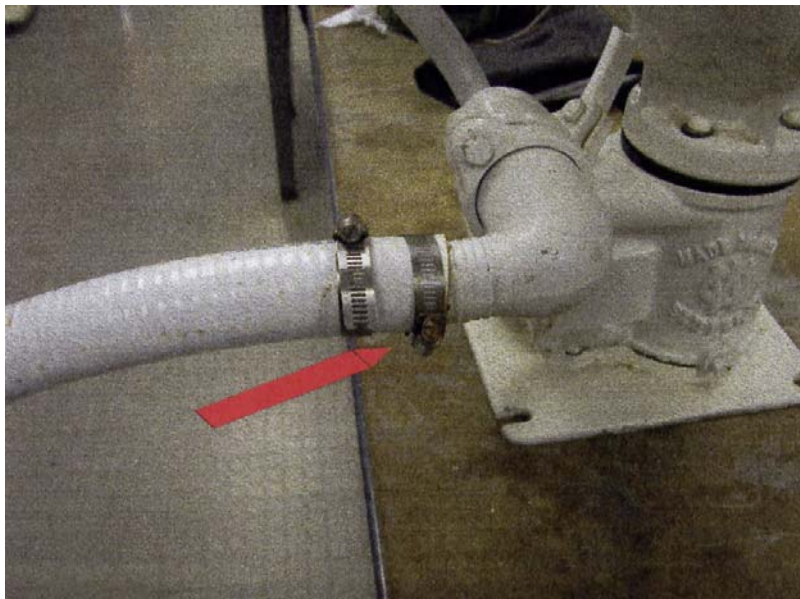


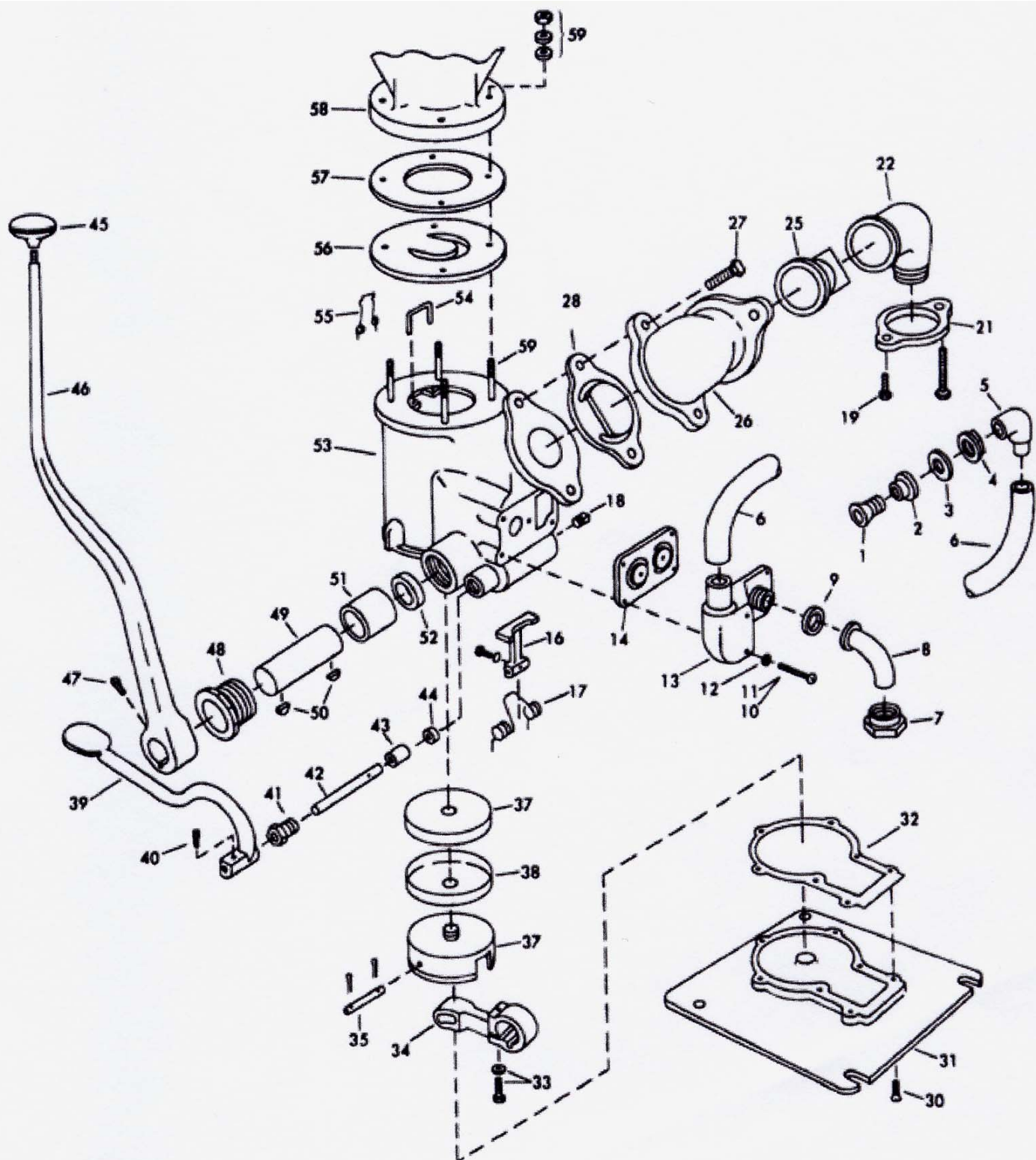
9. The unit is now ready to be placed back in the Head Compartment. Position the Toilet on the original stand and bolt to the deck. First slide the Base Plate (#31) into position and attach the two rear bolts. Then thread the two front bolts through the original holes and attached the nut to the bolt by reaching through the outboard access panel. Once you have all four bolts in place with nuts started, tighten until snug.

10. Attach the Inlet Valve Tailpiece (#8) with the original hardware making sure the leather Tailpiece gasket (#9) is oriented as before, with the smooth side against the bronze Inlet Valve Tailpiece Nut (#7)



11. Finally, attach the Discharge Tailpiece (#22) to the discharge tubing and secure it with two hose clamps.







1	PO150-16	BOWL SPUD	\$4.44
2	PO150-65	BOWL SPUD RUBBER GASKET	\$3.11
3	PO154-79	BOWL SPUD FRICTION WASHER	\$1.44
4	PO150-24	BOWL SPUD LOCK NUT	\$3.11
5	PO150-32	BOWL SPUD ELBOW	\$6.56
6	PO153-39	INLET FLUSH TUBING	\$4.44
7	PO158-83	INLET VALVE TAILPIECE NUT	\$6.67
8	PO158-75	INLET VALVE TAILPIECE 90 DEG	\$22.22
9	PO111-55	INLET VALVE TAILPIECE GASKET	\$2.20
10	PO171-94	INLET VALVE SCREW, 1 3/4" (INCLUDES 2)	\$5.56
11	PO171-86	INLET VALVE SCREW, 5/8	\$5.56
12	PO172-44	INLET VALVE WASHERS FOR SCREWS (INCLUDES 5)	\$1.88
13	PO171-78	INLET VALVE COVER	\$39.90
14	PO172-51	INLET FLAP VALVE ASSEMBLY	\$6.67
16	PO171-52	INLET CONTROL LEVER, SCREW, & WASHER	\$19.75
17	PO170-04	FLUSH CONTROL LEVER SPRING	\$4.75
18	PO165-35	BASE DRAIN PLUG	\$4.11
19	PO158-42	COUPLING FLANGE BOLT (INCLUDES 2)	\$2.22
21	PO171-45	DISCHARGE TAILPIECE FLANGE	\$21.11
22	PO171-11	DISCHARGE TAILPIECE	\$38.50
25	PO133-00	JOKER VALVE	\$10.78
26	PO171-29	RISING MAIN	\$48.00
27	PO158-42	RISING MAIN BOLT (INCLUDES 2)	\$2.22
28	PO171-39	DISCHARGE FLAP VALVE ASSEM	\$14.44
30	PO173-01	BASE PLATE SCREW (INCLUDES 7)	\$8.56
31	PO170-20	BASE PLATE, PLUS 7 SCREWS, & GASKET	\$122.22
32	PO168-99	BASE PLATE GASKET	\$8.89
33	PO168-16	PISTON LEVER SCREW AND WASHER	\$2.22
34	PO168-40	PISTON LEVER, PLUS SCREW AND WASHER	\$71.11
35	PO168-81	PISTON PIN AND 2 COTTER PINS	\$13.33
37	PO168-32	PISTON HEAD, PLUS PIN AND COTTER PINS	\$122.22
38	PO168-24	PISTON CUP LEATHER	\$19.95
39	PO168-57	FOOT PEDAL WITH SCREW	\$48.89
41	PO173-19	INLET CONTROL SHAFT PACKING NUT	\$11.33
42	PO168-73	INLET CONTROL SHAFT	\$12.22
43	PO172-77	INLET CONTROL SHAFT PACKING GLAND	\$10.00
44	PO169-80	INLET CONTROL SHAFT PACKING	\$8.89
45	PO171-03	PUMP HANDLE KNOB	\$9.80
46	PO170-53	PUMP HANDLE KNOB AND SET SCREW	\$79.00
48	PO170-38	PUMP SHAFT PACKING CAP	\$35.56
49	PO168-65	PUMP SHAFT	\$37.78
50	PO169-23	PUMP SHAFT KEY (INCLUDES 2)	\$5.56
51	PO170-46	PUMP SHAFT PACKING GLAND	\$15.56
52	PO169-98	PUMP SHAFT PACKING	\$8.89
53	PO170-12	BASE CASTING	\$375.00
54	PO159-25	WASTE VALVE SPRING PIN	\$4.33
55	PO159-33	WASTE FLAP VALVE SPRING	\$4.33
56	PO159-17	WASTE FLAP VALVE ASSEMBLY	\$10.78
57	PO159-09	BOWL GASKET	\$18.11